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Research Article

Institutions or Contingencies? A Cross-Country Analysis of Management Tool Use by Public Sector Executives

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Abstract: *Management tools are often argued to ameliorate public service performance. Indeed, evidence has emerged to support positive outcomes related to the use of management tools in a variety of public sector settings. Despite these positive outcomes, there is wide variation in the extent to which public organizations use management tools. Drawing on normative isomorphism and contingency theory, this article investigates the determinants of both organization-oriented and client-oriented management tool use by top public sector executives. The hypotheses are tested using data from a large-N survey of 4,533 central government executives in 18 European countries. Country and sector fixed-effects ordinary least squares regression models indicate that contingency theory matters more than normative isomorphism. Public executives working in organizations that are bigger and have goal clarity and executive status are more likely to use management tools. The only normative pressure that has a positive impact on management tool use is whether public sector executives have a top hierarchical position.*

Evidence for Practice

- Management tool use might be a norm that public sector executives feel is required of them to be considered "professional" top managers.
- Similarly, management tool use might be influenced by the contingencies of the organization in which public sector executives work.
- Our results indicate that an organization's contingencies better predict management tool use by public sector executives than normative pressures.
- In order to stimulate management tool use in public organizations, public sector executives working in smaller organizations that have more ambiguous goals and nonexecutive status should be targeted.

The New Public Management (NPM) movement of the 1980s generated an influx of private sector management tools into public organizations (Hood 1991; Osborne 2006). Instruments such as strategic planning, performance appraisal, and management by objectives became the core of the public manager's toolbox. Because the private sector was considered a "role model" in efficiency and effectiveness, it was argued that these tools could also generate a more efficient and effective government (Diefenbach 2009). In recent years, insights from service management have complemented these more organization-oriented management tools with client-oriented management tools such as client surveys and quality management systems. These tools, it has been argued, can help public organizations become more responsive to the needs of their clients—thus answering the call for a more service-dominant approach to public management (Osborne, Radnor, and Nasi 2013).

At the heart of management tools' popularity is the assumption that these tools contribute to public service performance—be it indicators of efficiency and effectiveness or indicators of responsiveness (Andrews and Van de Walle 2013; Walker and Andrews 2015). Indeed, empirical evidence has emerged to support positive outcomes resulting from the use of organization-oriented and client-oriented management tools by public organizations (e.g., Audenaert et al. 2016; Poister, Pasha, and Edwards 2013), and recent meta-analyses have confirmed the significant and positive association, on balance, between several management tools and public service performance (Gerrish 2016; Walker and Andrews 2015). At the same time, critics have argued that adopting management tools does not always make sense and does not contribute to productivity or efficiency. Andrews (2010), for instance, reviewed studies on the introduction of performance management in public organizations and found that this made little difference to organizational efficiency.

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Similarly, Hood and Dixon (2015) painted a less positive picture of the effect of three decades of managerialist government reforms on economy and efficiency. Likewise, research has suggested that management tools are sometimes adopted for reasons of individual and organizational legitimacy and mimicry, rather than for improving performance (Dahler-Larsen 2000).

Despite the overall popularity of management tools in public organizations as well as the evidence supporting (mainly) positive outcomes, widespread heterogeneity of tool use has been observed throughout the public sector, and little evidence has been uncovered aimed at explaining that heterogeneity (George and Desmidt 2014; Poister, Pitts, and Edwards 2010). Several authors have looked at management tool use across public organizations (e.g., Berry 1994; Poister and Streib 1989, 2005) and found significant individual, organizational, and sectoral differences in the extent to which management tools are used. Nevertheless, few studies have delved into the determinants of these differences (George and Desmidt 2014). Empirical studies have typically looked at management tools as something public organizations "have," a macro process that helps explain performance, whereas little is known about tools as something that public sector practitioners "do" (Bryson, Crosby, and Bryson 2009; George, Desmidt et al. 2017). More insights are required into the people actually using management tools in their daily practice. Hence, this article investigates the determinants of management tool use in the public sector and asks, Why are some public sector executives more prone to use management tools than others?

Drawing on normative isomorphism (Powell and DiMaggio 1991), we hypothesize that public sector executives who have significant private sector experience, who have a management degree, who hold high hierarchical positions, and who work in organizations that have unclear goals are more likely to use management tools as a mechanism to enhance their legitimacy. We complement these hypotheses with insights from contingency theory (Donaldson 2001) and argue that public sector executives working in bigger organizations with clear goals and executive status are more prone to use management tools because of their organizational context. These hypotheses are tested using a cross-sectional, large-*N* survey of 4,533 public sector executives from 18 European countries. Two country and sector fixed-effects ordinary least squares (OLS) regression models are constructed: one focused on organization-oriented management tools as the dependent variable and one focused on client-oriented management tools as the dependent variable.

This article contributes to the public management literature in that it is one of the first large-*N* empirical studies to investigate the role of normative isomorphism and contingency theory in explaining management tool use in public organizations and to use a sample of central government executives from 18 European countries. Insights into the determinants of management tool use can help explain the current heterogeneous situation in the public sector and provide policy makers with evidence on where to prioritize efforts when devising and implementing public management reforms. We also identify the applicability of normative isomorphism and contingency theory as theoretical frameworks within public management and assess which of the two frameworks has the strongest explanatory value in the specific case of management tool use by public sector executives.

Moreover, by using data from 18 European countries, the predominant Anglophile focus of public management literature is complemented by a broader European perspective. This is no trivial matter, as recent insights have emphasized the importance of context and culture when investigating core questions within public management (Meier, Rutherford, and Avellaneda 2017; O'Toole and Meier 2015). We account for this contextual reality by using evidence from 18 European countries and by identifying—through a country and sector fixed-effects model—which findings on management tool use hold across these European countries and sectors. Indeed, there are several differences between the European Union (EU) and U.S. public sectors, where most research has been focused, including the more extensive regulatory environment within the EU as well as the stronger influence of labor unions (Löfstedt and Vogel 2001). Additionally, public organizations within the EU experience less autonomy, stronger political control, and more regulated labor markets than their U.S. counterparts (Meier, Rutherford, and Avellaneda 2017). These contextual differences thus make the EU a particularly interesting setting to complement current U.S.-based studies.

We first present our hypotheses based on normative isomorphism and contingency theory. Next, we elaborate on our methods and data. We present the results from two country and sector fixed-effects OLS regression models and discuss the implications of our findings for public management theory and practice.

Theory and Hypotheses

There is an established research tradition that describes the use and diffusion of management tools in the public sector. Studies have looked at management tools in general (e.g., Poister and Streib 1994; Rivenbark and Kelly 2003) as well as specific tools such as management accounting (e.g., Lapsley and Wright 2004), performance measurement (e.g., Poister and Streib 1999; Torres, Pina, and Yetano 2011), management by objectives (e.g., Poister and Streib 1995), and strategic planning (e.g., Berry and Wechsler 1995; Poister and Streib 2005). These studies have predominantly focused on U.S. and U.K. local government, with some notable exceptions. For instance, Botner (1985) investigated management tool use at the U.S. state level. Damonte, Dunlop, and Radaelli (2014) looked at the use of policy control tools in 17 European countries. Van Dooren (2005) centered on performance measurement at the Flemish regional government level, and Jeannot and Guillemot (2013) focused on management tool use in French central government departments.

Typically, these studies describe the presence of management tools and potential differences across groups, whereas explaining these differences has received limited attention. More recent work has attempted to explain variation in and effects of the use of management tools, generally couched under the conceptual umbrella of innovation diffusion (e.g., Walker, Damanpour, and Devece 2010; Hansen 2011) or normative and mimetic isomorphism (e.g., Pina, Torres, and Yetano 2009). Our article builds on this research tradition using two complementary theoretical approaches to explain variation in management tool use by public sector executives. The first is normative isomorphism, and the second is contingency theory. Similar studies on the use of management tools have employed exactly this theoretical juxtaposition as well, and findings either support their

interconnectedness (e.g., Carvalho, Gomes, and Fernandes 2012) or mainly support contingency theory (e.g., Lægreid, Roness, and Rubecksen 2007). Figure 1 presents the conceptual model, which will be discussed in the following sections.

Normative Isomorphism and Management Tool Use

The first theoretical approach is normative isomorphism. The managerialization of public sector executives is a process of professionalization and standard setting. This means that members of the profession will use practices associated with the management profession such as organization-oriented and client-oriented management tools. This professionalization is "the collective struggle of members of an occupation to define the conditions and methods of their work" (Powell and DiMaggio 1991, 152).

The shift in public sector executives' role from being administrators to becoming public managers means that members of this managerial occupation come to identify themselves not just as members of the administrative elite but also as members of the managerial profession, adhering to commonly accepted standards within that group. To garner legitimacy, they want to present themselves as new public managers. This involves embracing organization-oriented and client-oriented management tools as the method to perform managerial work. This identification with the managerial profession has its source in a shared formal education and in the existence of professional networks for the formulation and diffusion of norms (Ashworth, Boyne, and Delbridge 2009; Powell and DiMaggio 1991). Increasingly, also in the public sector, such networks and standard setting become transnational and international (Djelic and Sahlin-Andersson 2006).

Teodoro (2014) looked at whether belonging to a specific profession makes managers manage differently. He argued that normative isomorphism helps explain "how professions shape executive management" (2014, 983). However, in a study on management tool use in Norwegian state-level public organizations, Lægreid, Roness, and Rubecksen (2007) found that normative isomorphism was not a major explanation for such use. This may be explained by the insights of Ashworth, Boyne, and Delbridge (2009), who, in a study among 101 English public sector organizations, found that normative isomorphism had a strong effect on organizational strategies and cultures but a weak effect on structures and processes. Management tools fit the second category.

There are two reasons why public organizations are a good area in which to study normative isomorphism's impact on managers. First, a study by Frumkin and Galaskiewicz (2004) found that government organizations are more susceptible than private organizations to normative isomorphic pressures, thereby confirming one of the hypotheses put forward by Powell and DiMaggio (1991). Second, we follow the recommendation of Teodoro (2014, 1000) to search "for evidence of normative isomorphism," especially in types of organizations in which executives come from different kinds of professions. This is particularly the case for European central government administrations, in which public sector executives show a trend toward managerialism (Van Thiel, Steijn, and Allix 2007) yet still have not converged around a shared (public) managerial identity (Meyer et al. 2014).

Public sector executives in European countries have a wide variety of professional backgrounds. Unlike some other industries, central government organizations are not dominated by one particular professional group at the managerial level. Some central government administrations are largely populated by traditional career bureaucrats, who have had legal training and spent most of their careers in the public sector. Others are populated by a new brand of managers who sometimes have private sector experience and management education. There are major country differences, with German top executives having enjoyed predominantly legal training and French top executives coming from the "Grandes Ècoles," but beyond this, one finds executives coming from a multitude of backgrounds and having a diverse set of educational backgrounds, ranging from law, political science, and economics to natural science, engineering, and medicine (Hammerschmid et al. 2016; Thijs, Hammerschmid, and Palaric 2018).

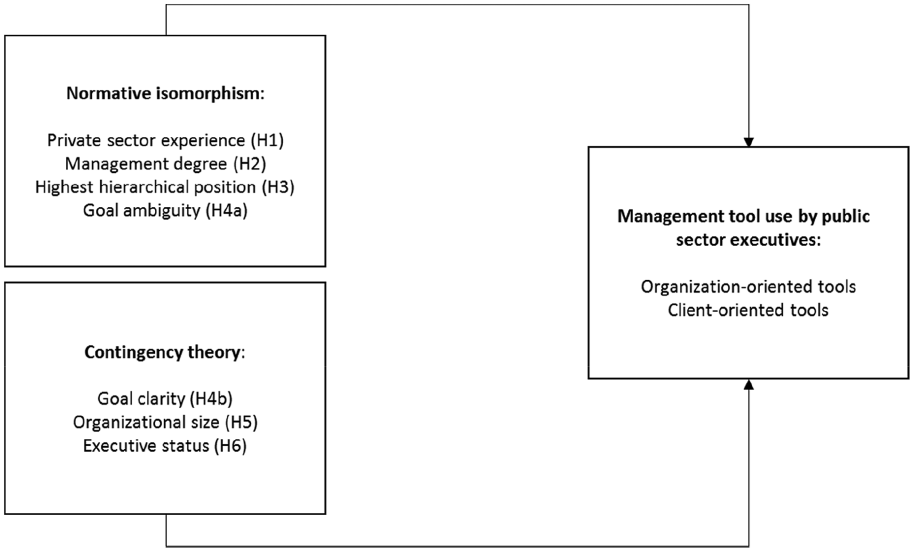

Figure 1 Model Predicting Management Tool Use by Public Sector Executives

These new public managers distinguish themselves from traditional bureaucrats by having more private sector work experience and an educational background in management studies (Meyer and Hammerschmid 2006; Van Thiel, Steijn, and Allix 2007). Management education is expected to have a positive impact on management tool use (Jarzabkowski et al. 2013), and having a background in the private sector is also expected to contribute to the professionalization of the managerial role. Public sector executives with a managerial degree and private sector experience can be expected, based on normative isomorphism, to more strongly associate with the profession of a manager—thus indicating that they are particularly prone to the use of management tools (Fernández Gutiérrez and Van de Walle 2018). This leads to the following two hypotheses:

Hypothesis 1: Public sector executives with extensive private sector experience are more likely to use management tools.

Hypothesis 2: Public sector executives with a management degree are more likely to use management tools.

In many studies on normative isomorphism, scholars have looked at professional association membership as a key channel for such pressures. Examples are studies looking at membership in professional associations, as in the case of accountants (Christensen and Parker 2010), or membership in some association that groups organizational peers (Frumkin and Galaskiewicz 2004). Top public sector management in Europe, however, is a diverse and fragmented group, making association membership less suitable for the operationalization of normative pressures. However, top public officials, especially those working within the same policy field, meet regularly at certain forums. An alternative operationalization is to consider membership in a select group of top public sector executives (i.e., those at the top hierarchical level of their organization) as a proxy for such associational membership. Top public sector executives belong to a small group of peers, and they may feel pressure to use modern management tools in order to demonstrate their position as a modern top executive within the peer group. In addition, they are a visible group, subject to scrutiny by the public and by politicians, especially when they sit at the top of the hierarchy, making it necessary for them to use management tools for legitimacy purposes. In addition, it can be assumed that top public sector executives are exposed to international peers through Organisation for Economic Co-operation and Development (OECD) and EU meetings, where they also pick up new practices (Pal 2012). We therefore hypothesize the following:

Hypothesis 3: Public sector executives at the highest hierarchical level of their organization are more likely to use management tools.

Powell and DiMaggio (1991) hypothesized that goal ambiguity is also a reason why managers might experience normative pressures because ambiguous goals imply a necessity to adjust to perceived norms as an indicator of legitimacy. The reason is that organizations whose goals are not very clear depend on factors other than output for their legitimacy, whereas for organizations with clear goals, it is easier to demonstrate their relevance and legitimacy. It is expected that public sector executives in organizations with high goal ambiguity will be subjected to a higher degree of normative isomorphism and will use all kinds of modern, almost normative, management tools to demonstrate their legitimacy. In relation to this, Teodoro (2014) argued that public organizations have particularly ambiguous and competing goals. Hence, the power of normative isomorphism will be especially strong because the managerial profession, and its use of management tools, provides norms on how to run a public organization (Teodoro 2014). To summarize, when an organization has unclear goals, it is hard to show that it is actually doing a good job. Hence, management tools can help demonstrate to the outside world that the organization is a real, legitimate organization that uses the same tools that other professional organizations use. For this reason, we hypothesize the following:

Hypothesis 4a: Public sector executives who perceive their organization to have high goal ambiguity are more likely to use management tools.

Contingency Theory and Management Tool Use

In their study of management tool use in Norwegian state-level public organizations, Lægreid, Roness, and Rubecksen (2007) concluded that neo-institutionalist approaches are insufficient to explain tool use. Instead, they suggested that tool use is largely driven by the "functional applicability of the tool" (Lægreid, Roness, and Rubecksen 2007, 407), and therefore contingency-based explanations may be of more use. Contingency theory argues that organizational structure and management behavior are contingent on the technical task and environment of the organization (Donaldson 2001). For instance, early contingency scholars found differences in the organizational structure of local government authorities depending on contingencies such as size, environment, interdependence, and change (Hinings, Greenwood, and Ranson 1975).

Contingency studies have shown that organizations that are characterized by standardization and formalization can be expected to more easily use management tools (Pugh et al. 1968). Burns and Stalker (1961) drew attention to one important aspect of standardization and formalization within organizations: goal clarity. When goals are clear, this leads to measurable outputs related to those goals—which, in turn, makes it easier to use management tools geared toward goal formulation and implementation. For instance, Van Dooren (2005) found that having measurable outputs in the organization was related to a higher uptake of performance measurement tools. Contingency theory would thus predict a higher use of management tools in organizations with goal clarity. This implies that the theoretical predictions on goal ambiguity/clarity emanating from contingency theory are exactly the opposite of those emanating from normative isomorphism. To summarize, clear goals imply easier to measure and manage processes and outputs which, in turn, make it easier to use management tools because of the strong fit between how management tools work (i.e., based on goals, indicators, etc.) and what is happening in the organization. We hypothesize the following:

Hypothesis 4b: Public sector executives who perceive their organization to have high goal clarity are more likely to use management tools.

A more prosaic contingency factor is organizational size. On the one hand, organizational size increases the need to use management tools to control the organization and to know what is happening within the organization and in its environment (Van Dooren 2005). On the other hand, organizational size is also indicative of the administrative and financial capacity to actually implement and use management tools. Earlier studies of the use of management tools have indeed demonstrated the importance of organizational size (e.g., Botner 1985; Lægreid, Roness, and Rubecksen 2007; Poister and McGowan 1984)—resulting in following hypothesis:

> **Hypothesis 5:** Public sector executives who work in bigger organizations are more likely to use management tools.

Third, task matters. For instance, in their study of Norwegian state-level public organizations, Lægreid, Roness, and Rubecksen (2007) found that service-providing organizations are more likely to use quality management tools. Public organizations with executive status, as delivery organizations, are typically involved in routine, standardized, repetitive tasks and work directly with clients. As a result, we can expect these organizations to be more likely to use management tools compared with ministries. Moreover, public organizations with executive status have been particularly influenced by NPM's emphasis on being more responsive to clients as well as efficient and effective—resulting in a natural need for organization-oriented and client-oriented management tools (Lægreid, Roness, and Rubecksen 2007). This results in our final hypothesis:

> **Hypothesis 6:** Public sector executives who work in public organizations with executive status are more likely to use management tools.

Methods

Data

This article relies on data from the COCOPS (Coordinating for Cohesion in the Public Service of the Future) Top Public Executive Survey, a population survey of top public sector executives in central government in European countries collected as part of a large collaborative European research project (http://www.cocops.eu) (see Hammerschmid et al. 2016). It is a population survey because it targeted the entire population of central government managers—including the regional level in federal countries—at the highest hierarchical levels, following a detailed mapping of government structures, top positions, and their incumbents by national research teams in each of the 18 participating European countries (Germany, France, Spain, Italy, Estonia, Norway, the United Kingdom, The Netherlands, Hungary, Austria, Portugal, Lithuania, Ireland, Sweden, Denmark, Finland, Iceland, and Croatia).

The total *N* is 6,824, or an average response rate per country of 31.50 percent. Response rates vary per country, ranging from 51 percent in Iceland or just above 40 percent in Finland and Sweden to just under 18 percent in Spain and Italy. Data were collected using a standardized questionnaire in the local language based on an English-language master questionnaire, using a combination of online questionnaires and paper-based questionnaires where local practice dictated such an approach or where initial response rates were too low. The COCOPS survey included questions on the use of NPM-driven, organization-oriented management tools such as strategic planning as well as service-driven, client-oriented management tools such as client surveys. The survey, method, description and data set are available in open access through the Gesis Social Science Data (Archive: https://dbk.gesis.org/dbksearch/).

In our analyses, we decided to not include respondents who had missing values on any of our variables. This is particularly the case for respondents who indicated they were not able to assess the extent of management tool use for certain management instruments; for that reason, they were removed from the data set. This reduced our data set to a total *N* of 4,533 public sector executives for our model predicting organization-oriented management tool use and 4,489 public sector executives for our model predicting client-oriented management tool use. We tested for nonresponse bias by conducting a time-trend extrapolation test comparing early and late respondents in the different country samples. In this test, the replies of two groups of early and late respondents were compared to assess whether replies significantly differed over time; no significant differences emerged. Moreover, sampling issues were avoided by surveying our entire population as opposed to extracting a sample framework (Lee, Benoit-Bryan, and Johnson 2012).

Because we are dealing with administrative elites who can be easily identified, privacy considerations were important, and therefore no administrative data on the respondents' organization could be linked to the survey answers. All data about the respondents' organization were thus provided by the respondents themselves. The strict privacy considerations meant that only limited representativeness checks could be performed on the data, but a number of such checks at the country level and on respondents' gender showed no major biases (Hammerschmid, Van de Walle, and Stimac 2013).

Dependent Variables

The dependent variables in this study are the use of management tools as reported by public sector executives. For a series of management tools, respondents were asked, "To what extent are the following instruments used in your organization?" This was measured on a seven-point scale, ranging from "not at all" to "to a large extent." Respondents were also explicitly offered a "cannot access" option, because not all public sector executives may be fully aware of the type of managements tools used throughout their organization. This resulted in missing data for specific financial management tools.

Because management tools typically have different outcomes (i.e., efficiency and effectiveness focus of organization-oriented, NPM-driven tools versus responsiveness focus of client-oriented, service-driven tools), we performed an exploratory factor analysis (EFA) on the list of eight management tools using principal component analysis (PCA) with an oblique rotation (see table 1). We use PCA because we aim to make statements based on our data and thus do not seek to extrapolate beyond our data, and we use oblique rotation because we expect our management tool factors to be correlated (Field 2013). The EFA resulted in two factors, which we have labeled "organization-oriented tools" and "client-oriented tools." Both factors had acceptable Cronbach's alphas (> .70).

Before proceeding with the analysis, we first present a number of descriptive findings at the country level to provide context to our

two dependent variables. Figure 2 and Figure 3 provide histograms containing the country averages across our sample for both organization-oriented management tool use and client-oriented management tool use. As these figures show, organization-oriented management tool use seems to be—on average—highest in the United Kingdom and Sweden and lowest in Spain and Hungary. Interestingly enough, these findings do not hold for client-oriented management tool use, with Lithuania and the Netherlands scoring highest and Croatia and Germany scoring lowest. While these findings give some general insights into the role of different administrative systems in explaining management tool use, it is important to note that these figures are based on broad averages across countries, and in-depth comparative case studies should be conducted to better contextualize these findings. Explaining between-country differences is not the focus of this study. Hence, as will be seen later on, we use country fixed effects to account for potential variation in management tool use attributable to country-level variables.[1]

Table 1 Factor Loadings of Management Tools

Management Tool	Organization-Oriented Tools	Client-Oriented Tools
Performance appraisal	.827	
Management by objectives	.775	
Risk management	.757	
Business/strategic planning	.694	
Cost accounting systems	.643	
Service points for clients		.935
Clients/user surveys		.639
Quality management systems		.510
Cronbach's alpha	.803	.716

Notes: Principal component analysis with oblique rotation. The two factors explain 61% of total variance.

Independent Variables

The two theoretical processes at work and the resulting set of hypotheses are operationalized as follows. For normative pressure, we measured private sector working experience as follows: "How many years of work experience outside the public sector do you have? In the private sector?" The categories included none, less than 1 year, 1–5 years, 5–10 years, 10–20 years, and more than 20 years. Having a management education was measured by asking, "What was the subject of your highest educational qualification?," with management/business/economics being one of the categories. To establish the respondent's hierarchical position, we asked, "What kind of position do you currently hold?," with three answer categories: the top hierarchical level in the organization, the second hierarchical level in the organization, and the third hierarchical level in the organization. Goal ambiguity/clarity is a scale variable consisting of four items based on the work of Jung (2011) measured on a seven-point strongly disagree/strongly agree scale: (1) "Our goals are clearly stated," (2) "Our goals are communicated to all staff," (3) "It is easy to observe and measure our activities," and (4) "We mainly measure inputs and processes" (Cronbach's alpha .724). A high score on this variable implies goal clarity, whereas a low score implies goal ambiguity.

Contingency variables included in this study are organizational size, measured as the total number of employees in the organization (<50, 50–99, 100–499, 500–999, 1,000–5,000, >5000); executive status—whether or not the respondent works for an executive or subordinate government body rather than a ministry-type organization; and goal ambiguity/clarity (see earlier description).

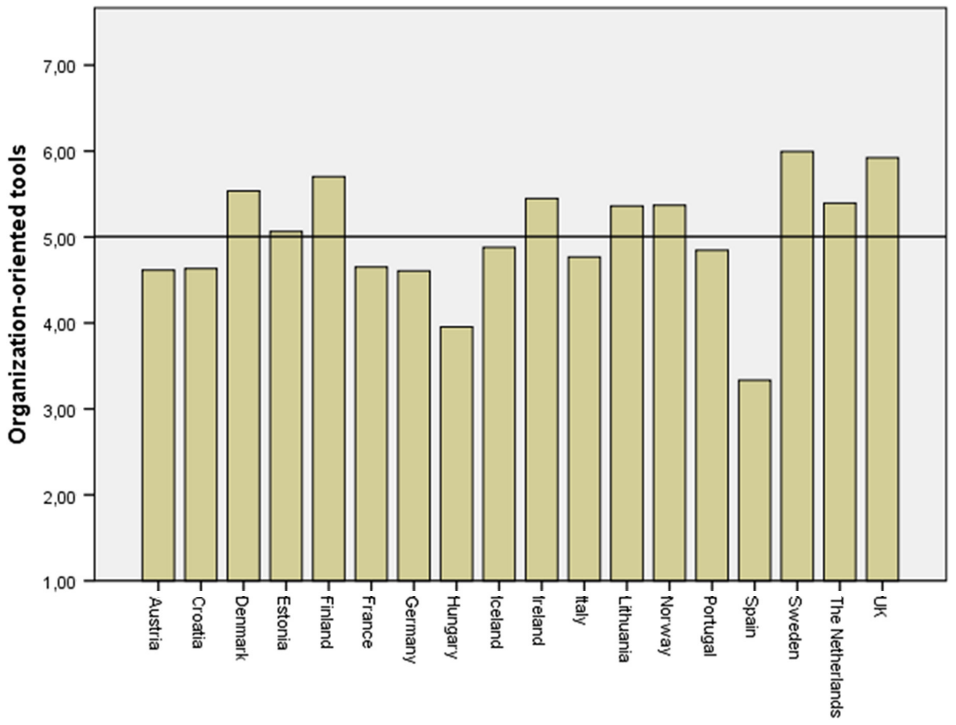

Figure 2 Histogram of Country Averages of Organization-Oriented Management Tool Use

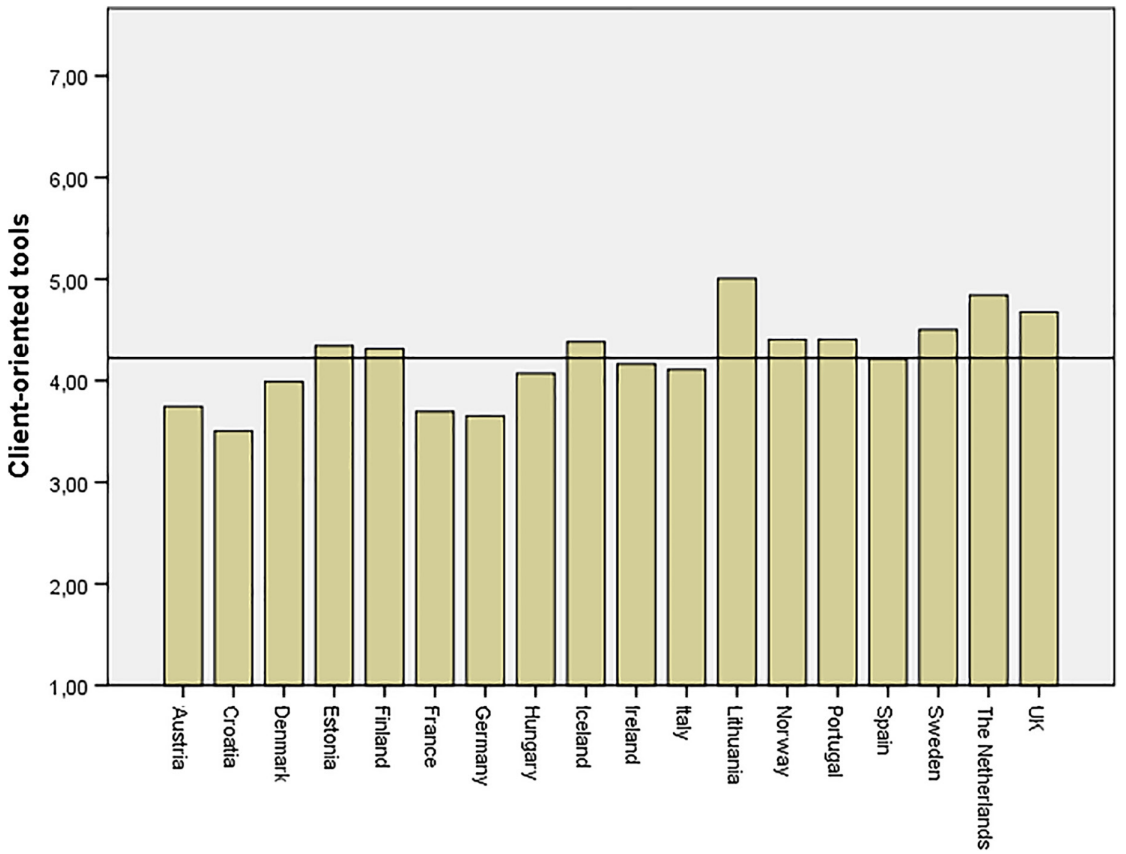

Figure 3 Histogram of Country Averages of Client-Oriented Management Tool Use

Finally, a number of sociodemographic control variables (gender, age, level of education) were added to control for differences in responses and related nonresponse patterns. Moreover, the policy sectors within which the respondent works were also added to control for management tool use variation related to policy-sector-specific characteristics. Similarly, country dummies were included to control for country-specific characteristics.

To provide further insights into the types of organizations included in our sample, we added some descriptives concerning our organizational-level variables (namely goal clarity, organizational size, and executive status). First of all, the average score for goal clarity is 4.93 (min = 1, max = 7) with a standard deviation of 1.27. On average, the included organizations tend to have rather clear goals, but there is quite some variation around the mean. Second, most organizations constitute 100–499 employees (about 35 percent), whereas the other size categories are more evenly distributed (1,000–5,000 employees about 15 percent, 500–999 employees about 14 percent, above 5,000 employees about 13 percent, fewer than 50 employees about 13 percent, and 50–99 employees about 9 percent). Finally, most of the organizations are agencies (about 55 percent), although there are still a lot of ministries included in the sample (45 percent).

Common Source Bias

This study uses a single, self-reported survey to measure all variables. This implies that common source bias (CSB) could be an issue. We use the recent recommendations of George and Pandey (2017) to investigate and discuss CSB issues in our data. First, most of our independent variables are demographic characteristics or organizational characteristics that one can expect to be factual (i.e., private sector experience, management education, top hierarchical position, organizational size, executive status of organization). It is unlikely that these variables suffer from CSB. Second, one of our independent variables (i.e., goal clarity/ambiguity) is perceptual and might be influenced by CSB when correlated with perceptions of management tool use. However, the Harman's single factor test on the items underlying these variables does not support the assumption that the correlations are strongly inflated by CSB (i.e., 42 percent of variance explained by single factor). Third, the variables under investigation in our article are not part of the set of variables argued to suffer from CSB by previous public administration articles—we should not assume CSB to be a prima facie inflator of our correlations. Fourth, the survey used in our analysis is the first to measure our variables across European countries and with top public sector executives—there is simply no archival data available for us to use in substitute of the survey.

Statistical Analysis

We use OLS regression analysis to test the hypotheses. In what follows, we present some of the essential information underlying our choice for this technique as recommended by Lee, Benoit-Bryan, and Johnson (2012). Although the items of our dependent variables were initially measured on an ordinal scale, the commuted overall score looks at the average score across items and is no longer ordinal—a linear model is preferred. Before conducting the OLS regression analysis, we need to ensure that our model adheres to the assumptions underlying OLS regression analysis.

First, we assess potential issues of multicollinearity by investigating the variance inflation factors (VIFs) of the included predictors. None of the observed VIFs exceeds a value of 10, indicating that multicollinearity is not an issue. An explanation for this is related to the high variation in public organizations across the sample, with very large agencies but also very large ministries, and an allocation of certain delivery tasks (with high goal clarity) to agencies in some systems but to ministries in others. Second, we assess the normality assumption of the regression residuals by looking at the normal P–P plot of the residuals as well as the associated histogram. Both figures indicate normally distributed residuals. We also adhere to the normality assumption.

Third, we address the assumption of individual independence. Our sample of public sector executives are nested in countries, sectors, and organizations—they are not independent. We include dummies for country and sector to account for clustering at these levels (i.e., a country and sector fixed-effects model). Because we do not have data on the organization to which executives belong, we cannot account for clustering at the organizational level. Hence, our hypotheses based on contingency theory could suffer from type I error because these organizational level variables are "stretched" to the individual level. To provide credence to our findings, we included a robustness check: we ran the model again but only included data from the highest hierarchal level of public sector executives (i.e., 995 respondents). There should be very few of these respondents who share the same organization thus strongly minimizing type I error. If our robustness check does not differ from our original findings concerning contingency theory, we argue these findings to be robust.

Fourth, we test for the absence of heteroscedasticity—or "fanning out"—of our residuals by looking at the individual scatter plots and conducting the Breusch-Pagan test. No indication of heteroscedasticity is present. Finally, we test for influential observations by calculating the Cook's distance. No distance is above the cutoff point of 1. We can now move on to the actual results of our analyses.

Results

Two country and sector fixed-effects OLS regression models are presented in table 2. The first model includes the use of organization-oriented management tools as the dependent variable, and the second model includes the use of client-oriented management tools as dependent variable. Both models are statistically significant. Model 1 explains almost half of the variation in the use of organization-oriented management tools, and model 2 explains about one-third of the variation in the use of client-oriented management tools.

Looking at the normative pressures, our analyses indicate that only one of our four hypotheses can be accepted. Private sector experience has little impact on management tool use.[2] Only when public sector executives have more than 20 years of private sector experience are they more likely to use client-oriented management tools. In all other cases, private sector experience has a limited part to play, resulting in the rejection of hypothesis 1. The impact of having a management degree is also not significant.[3] Public sector executives who studied business, management, or economics are not more likely to use management tools (i.e., rejection of hypothesis 2). However, as expected based on normative isomorphism, public sector executives at the highest hierarchical level of their organization are more likely to use both organization-oriented and client-oriented management tools compared with those at lower levels (i.e., acceptance of hypothesis 3).

Finally, goal ambiguity is not a significant positive predictor of management tool use—rather, the exact opposite is the case. When assessing the role of goal clarity/ambiguity in management tool use, the arguments of contingency theory are more applicable than those of normative isomorphism: goal clarity positively relates to management tool use as opposed to negatively (i.e., acceptance of hypothesis 4b and rejection of hypothesis 4a). Importantly, when looking at the standardized regression coefficients of all predictors, we find that goal clarity is by far the strongest predictor of both organization-oriented and client-oriented management tool use.

Apart from the role of goal clarity, the other two hypotheses based on contingency theory are also accepted. Public sector executives working in bigger organizations are more likely to use management tools (i.e., acceptance of hypothesis 5), and the same holds for those working in public organizations with executive status (i.e., acceptance of hypothesis 6). Looking at our controls, gender and education level have limited impact, but age does have a significant impact—with public sector executives aged 56–65 being most likely to use organization-oriented and client-oriented management tools.

To check for potential type I errors in our analyses of the contingency-theory-based variables (see "Statistical analysis"), we reran the foregoing models but this time only used data from the executives at the highest hierarchical level of their organization (i.e., 995 respondents). In both models, the exact same results were uncovered (i.e., goal clarity significant positive and strongest predictor, organizational size significant positive predictor, and executive status significant positive predictor). This robustness check confirms the validity of our initial findings and the limited impact of type I error.

Discussion

This article used a cross-country, large-*N* survey of European public sector executives to answer following question: which public sector executives are particularly prone to the use of management tools? Hypotheses were defined based on normative isomorphism and contingency theory, and two country and sector fixed-effects OLS regression models were used to test these hypotheses. The models indicate that public sector executives who have the highest hierarchical positions in their organization and work in bigger organizations with perceived goal clarity and executive status are more prone to using management tools. This finding implies that, in the particular case of management tool use by public sector executives, contingency theory outperforms normative isomorphism. There are several implications of these findings for public management theory and practice.

Although normative isomorphism is argued to be a potent framework to predict management tool use in organizational theory (Powell and DiMaggio 1991), our findings do not support its importance. Management education and private sector experience

Table 2 OLS Regression Results

Independent Variable	Organization-Oriented Tools		Client-Oriented Tools	
	B (s.e.)	β	B (s.e.)	β
Constant	2.454*** (.128)	n/a	.246 (.174)	n/a
Normative pressures				
Private sector experience (none/less than 1 year is reference)				
1–5 years	–.046 (.034)	–.016	.011 (.046)	.003
5–10 years	–.068 (.051)	–.015	.074 (.069)	.014
10–20 years	–.040 (.059)	–.008	.116 (.081)	.019
More than 20 years	–.073 (.080)	–.010	.275* (.109)	.033
Degree type (other degree is reference)				
Management	.011 (.035)	.003	–.011 (.048)	–.003
Hierarchical level (third level is reference)				
Second hierarchical level	.069+ (.037)	.025	.088+ (.050)	.028
Top hierarchical level	.226*** (.045)	.070	.213** (.062)	.056
Organizational contingencies				
Organizational size (<50 employees is reference)				
50–99 employees	.116+ (.067)	.025	.383*** (.091)	.071
100–499 employees	.324*** (.056)	.117	.610*** (.075)	.187
500–999 employees	.347*** (.063)	.092	.675*** (.085)	.152
1.000–5.000 employees	.415*** (.064)	.112	.844*** (.086)	.192
Over 5,000 employees	.473*** (.067)	.118	1.104*** (.092)	.233
Executive status (ministry is reference)				
Executive status	.181*** (.036)	.067	.735*** (.049)	.231
Goal clarity	.556*** (.014)	.461	.517*** (.019)	.362
Controls				
Gender (male is reference)				
Female	.026 (.031)	.009	.067 (.042)	.020
Age (35 years old or less is reference)				
36–45 years old	.055 (.071)	.017	.174+ (.097)	.046
46–55 years old	.116+ (.070)	.043	.267** (.096)	.083
56–65 years old	.151* (.072)	.052	.326** (.099)	.094
66 years old or older	.091 (.167)	.006	.236 (.227)	.014
Educational level (graduate degree/other is reference)				
Postgraduate degree (MA level)	–.024 (.044)	–.008	.075 (.060)	.023
PhD/doctoral degree	–.076 (.057)	–.020	–.050 (.077)	–.011
R^2	.487		.328	
Adjusted R^2	.481		.320	
F	81.727***		41.671***	
N	4,533		4,489	

Notes: Dummies for country and sector were included to control for the variation attributable to country- or sector-level variables. These are not presented in the table.
+ $p<.10$; * $p<.05$; ** $p<.01$; *** $p<.001$.

did not seem to spark a need for more management tool use by the surveyed public sector executives—despite our argument that these normative pressures would generate a sense of belonging to the management profession and thus a norm to use management tools. Nevertheless, one normative pressure did have an important part to play: hierarchical level. In line with our argument, public sector executives at the highest hierarchical level of their organization can be argued to belong to a professional group of top-level public managers who are strongly scrutinized by the public and by politicians and thus more likely to use management tools in their search for legitimacy. This finding gives some credence to the applicability of normative isomorphism in explaining the use of public management practices (complementing the findings of, e.g., Decramer et al. 2012).

We would like to emphasize that although our findings on normative isomorphism are not particularly potent, there are other isomorphic pressures that we did not investigate. Specifically,

we encourage future research to include the role of coercive isomorphism (i.e., formal rules and regulations) and mimetic isomorphism (i.e., copying successful organizations) in explaining management tool use within the public sector (Powell and DiMaggio 1991). Previous studies have indicated the importance of these pressures for public management practices (e.g., Ashworth, Boyne, and Delbridge 2009; George, Baekgaard et al. 2018).

We join the findings of Lægreid, Roness, and Rubecksen (2007) by uncovering the importance of contingency theory over normative isomorphism. Indeed, all three hypotheses based on contingency theory were accepted (Donaldson 2001). Public sector executives working in bigger organizations are more likely to use management tools because of the capacity underlying such organizations. Size has been argued to be a proxy for professionalization—that is, bigger public organizations are more professionalized—and our findings give further credence to this assumption (e.g., Andrews and Boyne 2010; Jung 2013). Moreover, because of the standardization of practices and direct contact with clients, public sector executives working in public organizations with executive status are more likely to indicate management tool use. Future research could assess why. In particular, it would be interesting to uncover the conditions under which public sector executives working in ministries are still likely to use management tools, as well as those working in smaller public organizations.

Throughout our models, one contingency variable emerged as the strongest predictor of management tool use: perceived goal clarity. Those public sector executives who perceived their organization to have clear goals were also more likely to use management tools. The impact of this finding cannot be underestimated. Goal clarity is not always a typical characteristic of public organizations—quite the opposite has been argued (e.g., Chun and Rainey 2005; Jung 2011). Nonetheless, evidence has emerged arguing that goal clarity is an antecedent of public service performance and clearly matters (e.g., Jung 2014). Our study indicates that goal clarity also has beneficial impact on management tool use, and this finding could indicate that management tool use is a mediating variable in the goal clarity/public service performance relation. Indeed, it could be that goal clarity, in part, contributes to public service performance because it enhances management tools use in public organizations. This observation is, at the moment, speculative, and we encourage future research to look into management tool use as a potential mediator in the goal clarity/public service performance relation.

An alternative view on the relation between goal clarity and management tool use, but one that cannot be tested in the framework of the current article, theory, and data, is that using management tools reduces ambiguity in the organization by forcing its operations within a common mold. In other words, there could be some reversed causality such that using management tools might help create goal clarity—thus allowing managers to be more reflexive and able to manage ambiguity. At the moment, however, this is speculative, and we encourage future work to explore this theoretical assumption.

Our findings have clear implications for policy makers and public managers. In the past couple of decades, public management reforms have become widespread in public organizations at all levels of government (Diefenbach 2009). Our results suggest that one standardized approach to implementing and assessing the progress of these reforms is unrealistic. Different organizations require different support and guidelines. It might be easier for bigger organizations with clear goals, standardized activities, and contact with clients to use management tools, whereas other organizations might struggle to meet the requirements and require more training as well as resources. Similarly, public managers should take into account the context in which they work and understand that this context will influence their intent to implement new managerial practices. We encourage a contingency approach to management tools in public organizations, in which policy makers and public managers investigate the context in which they work and adapt their reform initiatives and practices accordingly (see, e.g., Bryson, Berry, and Yang 2010; Poister, Pitts, and Edwards 2010 Woods 2009).

Limitations

Although our article is one of the first to investigate the determinants of management tool use by public sector executives across 18 European countries, some limitations need to be acknowledged. First, although we argued that CSB is not much of an issue in our analyses, using a cross-sectional survey does imply issues of endogeneity. Our findings are limited to associations, and we cannot make statements on causality (George and Pandey 2017). We suggest that future research address this issue by using, for instance, research designs based on difference-in-differences or longitudinal analyses.

Second, we chose to use cross-country data as a means to generalize our findings beyond specific countries. We did not aim to explain between-country variance, and we encourage other authors to investigate that variance by looking at country-level variables. The external contingencies of public organizations are different depending on the country. Such contingencies include the political environment (e.g., more conservative versus more liberal political leadership), administrative system and culture (e.g., western versus southern European traditions), or external pressures to implement savings (e.g., austerity regimes). Also, the ways in which managers are recruited may differ substantially (e.g., having a central independent body responsible for recruitment versus political appointments), which means that the group of top public managers in one country may display more of the characteristics of being a profession than that in other countries. It is therefore important for future studies to look in more detail at country-level determinants (see also Jeannot, Van de Walle, and Hammerschmid 2018).

Third, because of anonymity issues, we cannot assign respondents to specific organizations. This implies that the organizational-level variables in our model (i.e., organizational size and organizational type) might suffer from type I error (false positives) because these data are "stretched" to the individual level (Hox 2010)—although our robustness check did not identify substantial type I error. In addition, such anonymity made it difficult to collect data on professional associations and networks to allow for a more fine-grained operationalization of normative isomorphic pressures and also inhibited further analysis of the exact tasks of the organization as well as the type of agency involved. We encourage future research to offer a more detailed operationalization of normative isomorphism and contingency theory—including, for instance, the profession the manager comes from and their exposure to OECD

or other European networks as well as different agency types (e.g., delivery versus advisory function).

Finally, we focused on formal education as a measurement of normative pressures. However, many training initiatives concerning management tools exist in government—although not necessarily resulting in formal degrees. This might imply that while an executive does not have a formal education in management, business, or economics he or she is still very knowledgeable about management tools because of a series of trainings and seminars. Future research can address this limitation by not only focusing on formal degrees but also assessing the impact of trainings, seminars, and other lifelong learning initiatives.

Conclusion

Management tool use is often argued to be the result of normative pressures experienced by managers as well as the contingencies of the organizations in which they work. In our study on public sector executives from 18 European countries, we find that organizational contingencies matter more than normative pressures in explaining management tool use. This suggests a better applicability of contingency theory over neo-institutional theories when predicting management tool use in a public sector setting. Future research can build on this finding and juxtapose other institutional pressures and contingencies than those included in our survey—including coercive and mimetic pressures or contingencies related to the environment of the organization. For practice, these findings suggest that public management reforms cannot neglect context—smaller public organizations with goal ambiguity and nonexecutive status are less inclined to adopt these tools and might require more training and support.

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Notes

1. One might argue that management tool use depends on country-level variables as opposed to being part of a manager's own discretion. Importantly, our data do not support this proposition. In another article (Jeannot, Van de Walle, and Hammerschmid 2018), we found that performance appraisal use has the highest degree of variation explained by country—but this is still only 30 percent. In other words, non-country-level variables explain the majority of variation in management tool use, which further validates our analysis.
2. One might argue that this is due to the limited number of public sector executives with private sector experience. However, only 26 percent of our sample had no private sector experience, whereas 22 percent had more than five years of private sector experience.
3. A similar argument might be applied to management education—few public sector executives have it. Again, the numbers show a different trend with over a quarter of the respondents (26.5 percent) coming from a business, management, or economics education.

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